subjects with pre-clinical or clinical Insulin-Dependent Diabetes Mellitus (IDDM).

43. A method of treatment comprising administering to a subject an effective amount of a peptide or chemical equivalent thereof for a time and under conditions sufficient to remove or substantially reduce the presence in said subject of autoreactive T-cells and/or autoantibodies to IDDM autoantigens wherein the peptide consists of the formula:

$$X_1X_2X_3$$

wherein X_1 and X_3 may be the same or different and each is an amino acid sequence consisting of from 0 to 15 naturally or non-naturally occurring amino acid residues; X_2 is selected from FFYTPKTRREAED (SEQ ID NO:1) and FWYIPPSLRTLED (SEQ ID NO:2) or a derivative or chemical equivalent thereof and wherein said peptide is capable of reacting with T cells and modifying T-cell function when incubated with cells from subjects having pre-clinical or clinical IDDM.

44. A pharmaceutical composition comprising a recombinant peptide or equivalent thereof according to any of claims 38 to 40 and one or more pharmaceutically acceptable carriers or diluents.

REMARKS

In response to the Office Action of February 1, 1999, Applicants have canceled without prejudice Claims 2-37 and submitted Claims 38-44, which when considered with the following remarks, is deemed to place the present application in condition

for allowance. Favorable consideration of newly submitted Claims 38-44 is respectfully requested.

In the first instance, the undersigned thanks Examiner VanderVegt for his helpful suggestions offered during the course of two telephone interviews held on April 27, 1999 and May 18, 1999. During the course of the second interview, the Examiner indicated that newly submitted claims 38-44 would be favorably considered. Support for Claim 38 appears throughout the specification, for example, at page 7, lines 4-19, and Claim 1 as originally filed. Support for Claim 39 also appears throughout the specification, for example, at page 2, lines 21-32, page 3, lines 17-22 (line 21 as presently amended), and lines 7-10, page 7, lines 4-19 and Claim 4 as originally filed. Newly submitted Claim 40 finds support throughout the specification including page 3, lines 12-26, and Claim 7 as originally filed. Support for newly submitted Claim 41 may be found throughout the specification including page 7, lines 4-19, and Claim 30 as originally filed.

In the Office Action of February 1, 1999, the Examiner has requested that Claims 8-29 be canceled from the application since such claims were non-elected in response to a restriction requirement. By this amendment, Claims 8-29 have been canceled from the application.

Claims 37, 2-5, and 7 remain rejected under 35 U.S.C. §102(a) and (e) as allegedly anticipated by U.S. Patent No. 5,473,049 to Obermeier et al. The Examiner suggests amendment of

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the claims to recite in part "a recombinant or synthetic peptide *consisting* of the formula $X_1X_2X_3$." The rejection of Claims 37, 2-5, and 7 is also based on the Examiner's position that the '049 patent discloses a peptide (SEQ ID NO:7) which is less than 60 and more than 10 amino acids.

Claims 37, 2-5, and 7 are canceled without prejudice by the present amendment. It is respectfully submitted that newly submitted Claims 38-44 are not anticipated by the disclosure of U.S. Patent No. 5,473,049 to Obermeier et al. Newly submitted Claims 38, 39, and 40 recite in part "a recombinant or synthetic peptide or chemical equivalent thereof consisting of the formula $X_1X_2X_3$. Further, Claim 38 recites in part that X_2 is "any amino acid sequence of 100 residues derived from, homologous to, or contiguous within amino acids 506 to 518 inclusive or derivatives thereof of human GAD65." Claim 39 recites in part that X_1 and X_3 consist of from 0 to 15 naturally or non-naturally occurring amino acid residues and that X_2 is an amino acid sequence of from 10 to 15 residues derived from, homologous to or contiguous within amino acids 506 to 518 inclusive or derivatives thereof of human GAD65." Claim 40 recites in part that X_1 and X_3 consist of from 0 to 15 naturally or non-naturally occurring amino acid residues and that X_2 is selected from FFYTPKTRREAED (SEQ ID NO:1) and FWYIPPSLRTLED (SEQ ID NO:2). Claims 41-43 are method claims which recite the administering to a subject an effective amount of the peptides recited in Claims 38-40. Claim 44 recites a pharmaceutical composition comprising a recombinant peptide

according to any one of Claims 38 to 40. Withdrawal of the rejection of Claims 37, 2-5, and 7 is respectfully requested.

Claims 37, 2-4,6-7, 30-33, and 35-36 remain rejected under 35 U.S.C.§102(a) and (e) as allegedly anticipated by WO 92/20811 (Zymogenetics et al.), published November 26, 1992. As discussed with the Examiner during the April 27, 1999 interview, since the International Publication Date for this application is more than one year prior to Applicants effective filing date (February 20, 1995), it is respectfully submitted that the rejection of Claims 37, 2-4, 6-7, 30-33, and 35-36 is proper under 37 U.S.C. §102(b). It is the Examiner's position that since the rejected claims recite a peptide "comprising", such claims are anticipated by the'811 PCT document which discloses recombinant GAD peptides comprising the sequence Applicant claims as X2. Claims 37, 2-4, 6-7, 30-33, and 35-36 are presently canceled without prejudice. Newly submitted claims 38-43 recite a peptide "consisting" of the formula $X_1X_2X_3$. Withdrawal of the rejection of Claims 37, 2-4, 6-7, 30-33 and 35-36 under section 102 of 35 U.S.C. as pertains to the newly submitted claims is therefore respectfully requested.

Claims 37, 2-4, 6-7, 30-33 and 35-36 remain rejected under 35 U.S.C. §102(a) and (e) as allegedly anticipated by U.S. Patent No. 5,674,978 to Tobin et al. According to the Examiner, the '978 patent teaches recombinant GAD protein comprising the sequence claimed as X_2 in the present application. As newly submitted claims 38-43 recite "peptide consisting of", withdrawal

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of the rejection of Claims 37, 2-4, 6-7, 30-33 and 35-36 under 35 U.S.C. §102(a) and (e), as pertains to the newly submitted claims is respectfully requested.

Claims 37, 2-4, 6-7, 30-33, and 35-36 have been rejected under 35 U.S.C. §102(b) as allegedly anticipated by Kaufman et al. (1993) *Nature 366*:69-71. Kaufman et al. disclose use of a full length human GAD peptide in a method of blocking the development of T cell autoimmunity to other beta cell antigens and that such data is applicable in immunotherapies for human IDDM patients. As newly submitted claims 38-43 recite a "peptide consisting", such claims are not anticipated by the disclosure of Kaufman et al. Withdrawal of the rejection of Claims 37, 2-4, 6-7, 30-33, and 35-36 under 35 U.S.C. §102(b) is respectfully requested as pertains to the newly submitted claims 38-43.

The Examiner has rejected Claims 2-7 and 37 under 35 U.S.C. §112, first paragraph due to the inventors allegedly not being in "possession" of the invention. Specifically, the Examiner objects to the recitation introduced in the prior amendment of "then no more than 5 contiguous amino acid residues are derived from human proinsulin or GAD65." The Examiner is of the opinion that the recitation introduces new matter into the application. It is respectfully submitted that newly submitted Claims 38-43 do not recite "then no more than 5 contiguous amino acid residues are derived from human proinsulin or GAD65." Applicants respectfully request therefore, withdrawal of the

rejection of Claims 2-7 and 37 under 35 U.S.C. §112, first paragraph, as pertains to newly submitted Claims 38-43.

Claims 2-7 and 37 have been rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Applicants respectfully submit that the rejection is moot as Claims 2-7 and 37 have been canceled from the application. The particular recitations to which the Examiner objects, such as the typographical error that "X2 is 0 to 40 amino acids in length","and "residues then no more than five", do not appear in the newly submitted claims. The newly submitted claims also have antecedent basis for "or chemical equivalent thereof." Withdrawal of the rejection of Claims 2-7 and 37 under 35 U.S.C. §112, second paragraph is therefore respectfully requested.

In view of the newly submitted claims and foregoing remarks, it is respectfully submitted that the present application is in condition for allowance, which action is earnestly solicited.

Respectfully submitted,

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